

**What is claimed is:**

1        1. An access point device, comprising:

2              a wireless transmission and reception unit for transmitting or receiving information of  
3              peripheral access point devices wirelessly;

4              a control unit for searching channel numbers used by the peripheral access point devices from  
5              the information from the wireless transmission and reception unit, deciding an optimal channel  
6              number from the channel numbers except for the used channel numbers, and setting the optimal  
7              channel number as a channel number; and

8              an operator terminal for managing and controlling the control unit.

1        2. The device according to claim 1, wherein, when searching the channel numbers, the

2              control unit transmits a probe request frame to the peripheral access point devices, receives probe  
3              response frames from the peripheral access point devices for a predetermined time, extracts the  
4              channel numbers from the received probe response frames, and stores the extracted channel numbers.

1        3. The device according to claim 2, wherein the control unit transmits the probe request frame

2              after setting basic service set identifiers field of the probe request frame as broadcast basic service  
3              set identifiers .

1        4. The device according to claim 2, wherein the control unit extracts the channel numbers  
2        from direct sequence parameter sets of frame bodies of the probe response frames.

1        5. The device according to claim 1, wherein, when searching the channel numbers, the  
2        control unit receives beacon frames from the peripheral access point devices for a predetermined  
3        time, extracts the channel numbers from the beacon frames, and stores the extracted channel  
4        numbers.

1        6. The device according to claim 5, wherein the control unit extracts the channel numbers  
2        from direct sequence parameter sets of frame bodies of the beacon frames.

1        7. The device according to claim 1, wherein, when determining the optimal channel number,  
2        the control unit selects one of the channel numbers except for the used channel numbers, decides  
3        whether the channel numbers obtained by subtracting '1' and '2' from the selected channel number  
4        and the channel numbers obtained by adding '1' and '2' to the selected channel number have been  
5        used, and sets the selected channel number as the optimal channel number when the channel  
6        numbers have not been used.

1        8. A method for setting a channel of an access point device, comprising:  
2              a peripheral search step for receiving information from peripheral access point devices, and  
3              searching channel numbers used by the peripheral access point devices;

4           an optimal channel number decision step for selecting one of the channel numbers except for  
5       the used channel numbers, and deciding whether the selected channel number is an optimal channel  
6       number; and

7           a channel setting step for setting the selected channel number as a channel number when the  
8       selected channel number is the optimal channel number.

1           9. The method according to claim 8, wherein the peripheral search step comprises:

2           a probe request frame transmission step for transmitting a probe request frame to the  
3       peripheral access point devices;

4           a probe response frame reception step for receiving probe response frames from the  
5       peripheral access point devices for a predetermined time; and

6           a channel number extraction step for extracting channel numbers from the received probe  
7       response frames, and storing the extracted channel numbers.

1           10. The method according to claim 9, wherein the probe request frame transmission step

2       transmits the probe request frame after setting basic service set identifiers field of the probe request  
3       frame as broadcast basic service set identifiers .

1           11. The method according to claim 9, wherein the channel number extraction step extracts

2       the channel numbers from direct sequence parameter sets of frame bodies of the probe response  
3       frames.

1           12. The method according to claim 8, wherein the peripheral search step comprises:

2           a beacon frame reception step for receiving beacon frames transmitted from the peripheral

3           access point devices for a predetermined time; and

4           a channel number extraction step for extracting the channel numbers from the beacon frames,

5           and storing the extracted channel numbers.

1           13. The method according to claim 12, wherein the beacon frame reception step extracts the

2           channel numbers from direct sequence parameter sets of frame bodies of the beacon frames.

1           14. The method according to claim 8, wherein the optimal channel number decision step

2           comprises the steps of:

3           selecting one of the channel numbers except for the used channel numbers; and

4           deciding whether the channel numbers obtained by subtracting 1 and 2 from the selected

5           channel number and the channel numbers obtained by adding 1 and 2 to the selected channel number

6           have been used.

1           15. An apparatus, comprising:

2           a first unit transmitting or receiving information of peripheral access point devices wirelessly;

3           a second unit searching channel numbers used by the peripheral access point devices from

4           the information from the first unit, deciding an optimal channel number from the channel numbers

5 except for the used channel numbers, and setting the optimal channel number as a channel number,  
6 when searching the channel numbers, the second unit transmits a probe request frame to the  
7 peripheral access point devices, receives probe response frames from the peripheral access point  
8 devices for a predetermined time, extracts the channel numbers from the received probe response  
9 frames; and

10 a third unit managing and controlling the second unit.

1 16. The apparatus according to claim 15, wherein the second unit stores the extracted  
2 channel numbers.

1 17. The apparatus according to claim 16, wherein the second unit transmits the probe request  
2 frame after setting basic service set identifiers field of the probe request frame as broadcast basic  
3 service set identifiers .

1 18. The apparatus according to claim 17, wherein the second unit extracts the channel  
2 numbers from direct sequence parameter sets of frame bodies of the probe response frames.

1 19. The apparatus according to claim 18, wherein, when determining the optimal channel  
2 number, the second unit selects one of the channel numbers except for the used channel numbers,  
3 decides whether the channel numbers obtained by subtracting a first number and a second number  
4 from the selected channel number and the channel numbers obtained by adding the first number and

5       the second number to the selected channel number that have been used, and sets the selected channel  
6       number as the optimal channel number when the channel numbers have not been used.

1           20. An apparatus, comprising:

2           a first unit transmitting or receiving information of peripheral access point devices wirelessly;  
3           a second unit searching channel numbers used by the peripheral access point devices from  
4       the information from the first unit, deciding an optimal channel number from the channel numbers  
5       except for the used channel numbers, and setting the optimal channel number as a channel number,  
6       when searching the channel numbers, the second unit receives beacon frames from the peripheral  
7       access point devices for a predetermined time, extracts the channel numbers from the beacon frames,  
8       and stores the extracted channel numbers; and  
9           a third unit managing and controlling the second unit.

1           21. The apparatus according to claim 20, wherein the second unit extracts the channel  
2       numbers from direct sequence parameter sets of frame bodies of the beacon frames.

1           22. The apparatus according to claim 21, wherein, when determining the optimal channel  
2       number, the second unit selects one of the channel numbers except for the used channel numbers,  
3       decides whether the channel numbers obtained by subtracting a first number and a second number  
4       from the selected channel number and the channel numbers obtained by adding the first number and  
5       the second number to the selected channel number have that been used, and sets the selected channel

6 number as the optimal channel number when the channel numbers have not been used.

7           23. A computer-readable medium having computer-executable instructions for performing  
8        a method, comprising:

9           receiving information from peripheral access point devices, and searching channel numbers  
10      used by the peripheral access point devices;

11          selecting one of the channel numbers except for the used channel numbers, and deciding  
12      whether the selected channel number is an optimal channel number; and

13          setting the selected channel number as a channel number when the selected channel number  
14      is the optimal channel number.

1           24. The computer-readable medium having computer-executable instructions for performing  
2        a method of claim 23, wherein the receiving of information from peripheral access point devices, and  
3        searching channel numbers used by the peripheral access point devices further comprises:

4           transmitting a probe request frame to the peripheral access point devices, transmitting the  
5        probe request frame after setting basic service set identifiers field of the probe request frame as  
6        broadcast basic service set identifiers;

7           receiving probe response frames from the peripheral access point devices for a predetermined  
8        time; and

9           extracting channel numbers from the received probe response frames, and storing the  
10      extracted channel numbers, extracting the channel numbers from direct sequence parameter sets of

11 frame bodies of the probe response frames.

1 25. The computer-readable medium having computer-executable instructions for performing  
2 a method of claim 23, wherein the receiving of information from peripheral access point devices, and  
3 searching channel numbers used by the peripheral access point devices further comprises:

4 receiving beacon frames transmitted from the peripheral access point devices for a  
5 predetermined time, extracting the channel numbers from direct sequence parameter sets of frame  
6 bodies of the beacon frames; and

7 a channel number extraction step for extracting the channel numbers from the beacon frames,  
8 and storing the extracted channel numbers.

1 26. The computer-readable medium having computer-executable instructions for performing

2 a method of claim 23, wherein the selecting of one of the channel numbers except for the used  
3 channel numbers, and deciding whether the selected channel number is the optimal channel number  
4 further comprises:

5 selecting one of the channel numbers except for the used channel numbers; and

6 deciding whether the channel numbers obtained by subtracting 1 and 2 from the selected  
7 channel number and the channel numbers obtained by adding 1 and 2 to the selected channel number  
8 have been used.